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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,539	10/01/2003	Takahiko Sakamoto	2003-1400A	5353

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EXAMINER

FARAHANI, DANA

ART UNIT PAPER NUMBER

2814

DATE MAILED: 07/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/674,539

Applicant(s)

SAKAMOTO ET AL.

Examiner

Dana Farahani

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Song et al., hereinafter Song (US Patent Application Publication 2002/0047128).

Regarding claim 1, Song discloses, figures 6b-8, an n-type nitride semiconductor layer 33; an n-side electrode 38, which is provided on the n-type nitride layer; a p-type nitride layer 35; a p-side electrode 37 having a p-side current diffusing member 36 and a p-side pad 37 provided on at least a part of the p-side current defusing member; wherein the n-side electrode has an n-side connecting portion 48 to be connected to a conductive member, and an n-side 48a (figure 8) extending portion which extends in the longitudinal direction from a predetermined part of top n-side connecting portion, and the p-side pad member has at least p-side connecting portion 47 to be connected to a conductive member, and the light-emitting diode further comprises an n-side connecting area, in which the n-side connecting portion is provided, provided in proximity to one end in the longitudinal direction, a p-side connecting area, in which the p-side connecting portion is provided, provided in proximity to another end in the longitudinal direction, and a middle area provided between them, and the n-side extending portion is

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positioned in the middle area, and extends so as to be opposed to the p-side current diffusing member, as can be seen in the figures.

Regarding claim 2, the light-emitting diode member further has a p-side extending portion 47a, which extends in the longitudinal direction from a predetermined part of the p-side connecting portion, and the p-side extending portion is opposed to the n-side extending portion in the middle area, and is positioned in the far side from the n-side extending portion in the p-side current diffusing member.

Regarding claims 3 and 4, the current diffusing member is transparent.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Song.

Song substantially discloses the limitations in the claims, as discussed above, but does not expressly disclose the relative distances between the extensive/connecting areas.

Song teaches that the modifications of the extensive portions distances are within the level of ordinary skill in the art (see page 5, paragraph 60). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify

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the relative distances between electrode extensions or connection portions to affect the current dispersion in those electrodes, and their extensions. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Note that also Song does not expressly disclose openings in the current diffusing member, it would have been obvious to make openings in that member to affect the light emitting characteristics of the device.

5. Claims 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Song in view of Kim (US Patent Application Publication 2001/0048113).

Regarding claims 11, 12, and 14-16, Song discloses the limitation in the claims, as discussed above, further disclosing an active layer 34.

Song does not disclose a plurality of bumps and dips are formed in the second area (of the n-type contact layer 33).

Kim discloses in figure 4, a photo-lens 71 of a LED device has bumps and dips, as can be seen in the figure. Kim also discloses this unevenness of the lens layer helps to reduce contact resistance of the layer and improve light absorption/emitting characteristics of the layer (see page 2, paragraph 27). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the second area of the n-type contact layer of the LED in the Song reference in order to get a reduced-resistance contact between that layer and the n electrode in the structure.

Regarding claim 13, note that if bumps are to be formed in the active layer of the Song reference, then in figure 8, if shown, they would have formed in a trapezoid, which

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is gradually thinner toward the p-type contact layer side (one of the sides of the trapezoid would be a line in the middle of layer 46).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dana Farahani whose telephone number is (571)272-1706. The examiner can normally be reached on M-F 9:00AM - 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M Fahmy can be reached on (571)272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

D. Farahani



LONG PHAM
PRIMARY EXAMINER